

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-11 (Cancelled).

Claim 12 (Currently Amended): A tire vulcanizing method comprising the steps of:

loading a green tire into a segmented tread mold having been opened radially outward;

performing a vulcanization processing with the segmented tread mold closed radially inward and with a bladder expanded inside the green tire having been loaded; and

upon completion of the vulcanization processing, removing the vulcanized tire by opening the segmented tread mold radially outward;

wherein the bladder is expandable and contractible at a vulcanization position within the segmented tread mold as well as at a tire delivery position which is outside the segmented tread mold to be a predetermined distance away from the vulcanization position along the axis of the segmented tread mold; and

wherein the method includes the steps of:

expanding the bladder at the delivery position to make the bladder hold the green tire loaded into the tire delivery position;

making the bladder load the green tire into the segmented tread mold at the vulcanization position;

after the vulcanization processing, making the bladder in the expanded state remove the vulcanized tire from the vulcanization position to the delivery position; and

contracting the bladder at the delivery position for releasing the vulcanized tire from the bladder.

Claim 13 (Previously Presented): A tire vulcanizing method in a vertical vulcanizer wherein relative to a lower mold containing a green tire, an upper mold arranged over the lower mold in axial alignment with the same is lowered to combine the upper mold with the lower mold; and wherein a pair of bladder operating sleeves are movable vertically and respectively air-tightly bind upper and lower end ring portions of a bladder which is expanded inside the green tire;

the method including the steps of:

making a single centering shaft pass through centers of the lower mold, the upper mold, the green tire, the bladder and the pair of bladder operating sleeves during a vulcanization by extending the single centering shaft from the upper mold into the pair of bladder operating sleeves; and

performing the vulcanization processing with the single centering shaft centering the pair of bladder operating sleeves relative to the lower mold and the upper mold.

Claim 14 (Previously Presented): The tire vulcanizing method as set forth in Claim 13, wherein the bladder is expandable and contractible at a vulcanization position inside a segmented tread mold which constitutes the lower mold to be opened and closed radially in a horizontal plane and is expandable and contractible also at a tire delivery position which is outside the segmented tread mold to be a predetermined distance upwardly away from the vulcanization position along the axis of the segmented tread mold;

the method including the steps of:

expanding the bladder at the delivery position to make the bladder hold the green tire loaded into the tire delivery position;

making the bladder load the green tire into the segmented tread mold at the vulcanization position;

after the vulcanization processing, making the bladder remove the vulcanized tire from the vulcanization position to the delivery position; and  
contracting the bladder at the delivery position for releasing the vulcanized tire from the bladder.

Claim 15 (Withdrawn): A tire vulcanizer comprising:

a vertically extending frame;

a lower mold fixedly arranged at a lower position than an approximately mid position of the frame in a vertical direction;

an upper mold arranged at a higher position than the mid position of the frame and guided on the frame to be vertically movable in axial alignment with the lower mold and to be positioned by a feed mechanism in the vertical direction;

a bladder arranged coaxially with a mold center axis passing through centers of the lower mold and the upper mold;

first and second bladder operating sleeves arranged approximately coaxially with the mold center axis to be vertically movable as well as to be horizontally displaceable minutely and respectively air-tightly binding a lower end ring portion and an upper end ring portion of the bladder;

bladder positioning mechanisms for independently vertically positioning the first and second bladder operating sleeves; and

a centering shaft arranged on the mold center axis to be vertically movable by another feed mechanism and enabled to pass through the upper mold, the bladder, the first and second bladder operating sleeves and the lower mold during a vulcanization for centering the first and second bladder operating sleeves relative to the upper mold and the lower mold.

Claim 16 (Withdrawn): The vulcanizer as set forth in Claim 15, wherein:

the bladder positioning mechanisms are able to position the first and second bladder operating sleeves so that the bladder is expanded at the vulcanization position inside the lower mold, and

the bladder positioning mechanisms are also able to position the first and second bladder operating sleeves so that the bladder is expanded at the approximately mid position of the frame in the vertical direction, the mid position being spaced upward from the vulcanization position.

Claim 17 (Withdrawn): The vulcanizer as set forth in Claim 16, further comprising:

a pair of upper and lower bladder expansion control members for being brought into contact respectively with upper and lower side surfaces of the bladder to control the expansion operation and the side surface shape in the expansion state of the bladder; and

control member positioning feed mechanisms for independently positioning the pair of the bladder expansion control members in the vertical direction.

Claim 18 (Withdrawn): The vulcanizer as set forth in Claim 15, wherein the bladder positioning mechanisms comprise:

a first bladder operating sleeve feed mechanism arranged at a higher position than the approximately mid position of the frame for vertically feeding the first bladder operating sleeve; and

a second bladder operating sleeve feed mechanism arranged at a lower position than the approximately mid position of the frame for vertically feeding the second bladder operating sleeve.

Claim 19 (Withdrawn): The vulcanizer as set forth in Claim 18, wherein the first bladder operating sleeve and the first bladder operating sleeve feed mechanism are connectable to and separable from each other; the vulcanizer further comprising:

connection means for connecting the first bladder operating sleeve to the first bladder operating sleeve feed mechanism.

Claim 20 (Withdrawn): The vulcanizer as set forth in Claim 19, wherein the first and second bladder operating sleeve feed mechanisms are respectively composed of servomotors which are controllable synchronously.

Claim 21 (Withdrawn): The vulcanizer as set forth in 15, further comprising:  
a movable frame arranged at a higher position than the approximately mid position of the frame and guided to be vertically movable on the frame; and wherein:

the upper mold is fixedly supported on the movable frame; and

the centering shaft is provided with a flange portion which comes to contact with an upper surface of the movable frame when a lower end portion of the centering shaft is secured to the frame not to be upwardly movable relative to the frame with itself passing through the lower mold.

Claim 22 (Withdrawn): The vulcanizer as set forth in 16, wherein:

the lower mold is composed of a segmented tread mold including a plurality of mold segments which are guided to be radially movable in a horizontal plane and a lower sidewall mold for closing the lower side surface of the segmented tread mold; and

the upper mold is composed of an upper sidewall mold for closing an upper side surface of the segmented tread mold.